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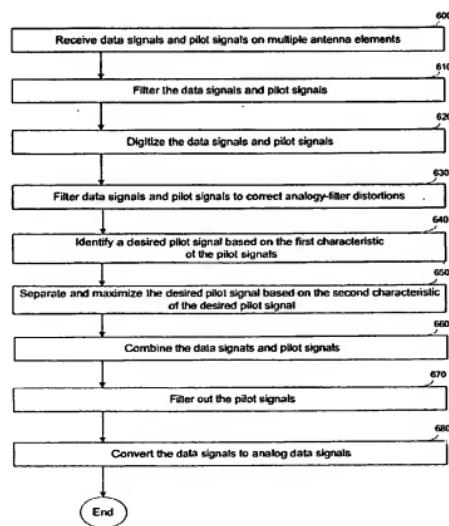
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## (54) Title: SMART ANTENNA BASED SPECTRUM MULTIPLEXING USING A PILOT SIGNAL



(57) Abstract: A system and method for using a pilot signal in a communication receiver having multiple antenna elements is described. A set of data signals and a set of pilot signals are received (600). A first pilot signal from the set of pilot signals is identified based on a first characteristic of the first pilot signal from the set of pilot signals (640). A set of weight values associated with the antenna elements are adjusted so that a second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the set of pilot signals (650). Consequently, a first data signal from the set of data signals and being uniquely associated with the first pilot signal is substantially optimized by the adjusting of the set of weight values associated with the antenna elements.

WO 02/069523 A1